XXIV QUARK MATTER DARMSTADT 2014

Contribution ID: **293** Type: **Poster**

Studying Dilepton Production from SIS to RHIC Energies: Transport Calculations vs. Coarse-grained Dynamics

Tuesday 20 May 2014 16:30 (2 hours)

Lepton pairs at low mass from heavy-ion collisions are considered good probes for chiral symmetry restoration and the in-medium properties of vector mesons. However, the broad variety of their sources requires models that can describe the complete nuclear reaction properly. For this, transport approaches (e.g. the UrQMD model) are frequently used, as they yield a realistic microscopic description of the collision dynamics. However, such microscopic models usually do not include any in-medium effects and are limited to hadronic degrees of freedom. We therefore present an alternative approach that uses coarse-grained output from transport calculations to extract local thermodynamic properties and determine thermal dilepton emission rates. The approach has the advantage that it can cover all collision energies and the whole space-time evolution in a unified description. To account for the medium effects on the ρ meson we apply and contrast the spectral function by Eletsky et al., which is obtained from empirical scattering amplitudes, and the many-body calculation by Rapp et al. We present results for SIS, SPS and RHIC energies and compare them to experimental data as well as the outcome from hydrodynamic and pure transport calculations.

On behalf of collaboration:

None

Author: ENDRES, Stephan (Frankfurt University / Frankfurt Institute for Advanced Studies)

Co-authors: VAN HEES, Hendrik (Goethe University Frankfurt); Mr WEIL, Janus (Frankfurt Institute for Advanced Studies); BLEICHER, Marcus (Uni Frankfurt)

Presenter: ENDRES, Stephan (Frankfurt University / Frankfurt Institute for Advanced Studies)

Session Classification: Poster session

Track Classification: Electromagnetic Probes